# Traditional and Local Knowledge: Estuarine Fisheries By-Catch in the Southern Gulf of St. Lawrence; Ecosystem Based Fisheries Management Considerations.

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## ABSTRACT

A by-catch survey on the commercial gaspereau (*Alosa pseudoharengus*), eel (*Anguilla rostrata*), silverside (*Menidia menidia*) and smelt (*Osmerus mordax*) fisheries was sent out to the Conservation and Protection detachment supervisors in every local office of DFO's Gulf Region. The purpose of the study was to: 1) estimate the magnitude of the by-catch of sport fish in commercially set box nets and pots for these four species in the Southern Gulf of St Lawrence; and 2) address the possibility of remedial actions to reduce by-catch in these fisheries. The survey was to be filled out by the fishery officers in consultation with the fishermen and stakeholders implicated in those fisheries. Based on the results of the survey and on the comments received, by-catch is a problem that exists within specific areas of DFO's Gulf Region estuarial fisheries. Recommendations included improving fishing gear selectivity, adding conditions on licences, managing closed times and elimination of specific aspects of the fishery to reduce sport fish by-catch.



## RÉSUMÉ

Un sondage concernant les prises accessoires lors de la pêche commerciale au gaspareau (*Alosa pseudoharengus*), à l'anguille (*Anguilla rostrata*), à la capucette (*Menidia menidia*) et à l'éperlan (*Osmerus mordax*) a été envoyé aux superviseurs de détachement de conservation et protection de chaque bureau local de la région du Golfe du MPO. Les buts de cette étude étaient : 1) d'estimer l'importance des captures accessoires des poissons de pêches récréatives dans les engins de pêches commerciales pour ces quatre espèces dans le Sud du Golfe du St.-Laurent ; et 2) d'évaluer la possibilité d'actions correctives afin de réduire ces prises accessoires. Le sondage a été complété par les agents de pêches en consultation avec les pêcheurs et autres intervenants impliqués dans ces pêcheries. Les résultats démontrent qu'un problème de prises accidentelles des poissons de pêche récréatives existe dans certaines zones de pêches estuariennes de la Région du Golfe du MPO. Les recommandations incluent l'amélioration de la sélectivité des engins de pêche, l'ajout de certaines conditions au permis de pêche, la gestion des temps de fermeture et l'élimination de certains aspects de la pêche afin de réduire les prises accessoires des poissons de pêches récréatives.

# INTRODUCTION

## Overview

For many years, in the gaspereau (*Alosa pseudoharengus*), eel (*Anguilla rostrata*), silverside (*Menidia menidia*) and smelt (*Osmerus mordax*) fisheries, concerns have been raised at how fishing practices have affected the resource. In 1995, a study on the commercial gaspereau, eel and smelt fisheries in the Miramichi river estuary showed the presence of striped bass by-catch in the gaspereau traps, fyke nets set for American eel and in the nets set for smelts (Bradford, Robichaud, Courtenay 1995). By-catch occurred to a different extent in all of these commercial fisheries, with unknown impact of these by-catches on the Miramichi population of striped bass.

In 1996, under the New Brunswick Responsible Fishing program, six projects on gear selectivity and harvesting technologies were carried out to address the by-catch issue (Robichaud 1996). Other fishing gear studies have also shown the relation between mesh size and selectivity properties with regards to the species composition and size of the fish. It was observed that because of certain non-selective properties of fishing gear that there is a large potential for non-targeted fish interception (Bradford, Chaput, Hurlbut, Morin 1997).

A study (Bradford, Chaput, Hurlbut, Morin 1997) on by-catch of white hake, winter flounder and striped bass in the commercial smelt fishery also showed that there were by-catches of each of these species in the commercial smelt fishing gears of the Miramichi river estuary. The results confirmed different level of by-catch in the smelt fishery. By-catch of white hake was at the same level as both smelt and tom cod and flounder by-catch was at less the half of smelt or tomcod. Interception of striped bass varied depending on age and size on the fish. It was concluded that management measures could be adopted to address the by-catch issue in this fishery. Recommendations consisted in delaying the opening date for the fishery, concentrating the fishing activity within a specific area and increasing the mesh size of the fishing gear as efficient ways to reduce by-catch in the Miramichi river.

This situation is by no means unique. On a world-wide scale, discarded by-catch is a major problem that represents about a quarter of the total world catch. For most species, the survival rate among discarded catch is very low. Some of these by-catch species are considered at risk (Cook 2001). Redesigning fishing gear and management techniques is often a viable solution to correct the situation.

## Purpose of the study

To develop an eco-system based approach, it is important to evaluate the current fishing techniques and study the magnitude of the by-catch of non-targeted species. More specifically, the purpose of this study was to:

1. Estimate (through local knowledge) the magnitude of the by-catch of sport fish (more specifically: salmon (Atlantic and landlocked), trout (lake, brook, speckled, brown, rainbow and sea trout), bass (smallmouth, largemouth and striped), perch (white and yellow), shad, gaspereau, brown bullhead, chain pickerel, white sucker, lake whitefish, eel, flounder, smelts, harbor porpoise and seals) in commercially set box nets and pots (for; gaspereau, eel, silverside and smelt) in the Southern Gulf of St. Lawrence.
2. Address the possibility of adaptive management measures to reduce by-catch in these fisheries.

## Description of fisheries

The current study focused on the fixed gear commercial fisheries for gaspereau, eel, silverside and smelt that occur seasonally in DFO's Gulf Region of the Southern Gulf of St. Lawrence (Figures 1, 2 and 3). The number of fishing licences in the Gulf Region is presented in Table 1. Landings (t) and value ($000) from the gaspereau, eel, silverside and smelt fisheries are presented in Table 2. The average landing between 1990 and 2000 from these fisheries is 5,257 t with an average value of $2,7 million.

The gaspereau (*Alosa pseudoharengus*) fishery has been an important factor in the economy of the Maritime Provinces since the colonial times, or around the 1800's. The majority of the catch is salted, but also used as fish meal, lobster and crab bait, pet food, or is smoked, canned or consumed fresh. The fishing season description by province, including the fishing method and closed time for the gaspereau fishery, are presented in Table 3. The average landing between 1990 and 2000 from the gaspereau fishery in the Gulf Region is 3,854 t with an average value of $806,800 (Table 2).

The history of the eel (*Anguilla rostrata*) fishery is similar to that of the gaspereau, having been an important factor in the economy of the Maritime Provinces since the 1800's. The catch is consumed in fresh, stewed, smoked and pickled forms. The fishing season description by province, including the fishing method and closed time for the eel fishery, are presented in Table 4. The average landing and value from the eel fishery between 1990 and 2000 is of 173.1 t and $701,300 (Table 2).

The commercial silverside (*Menidia menidia*) fishery on PEI dates back to the early 1970's and is the only commercial silverside fishery in Canada. Silversides are fished in tidal ponds, rivers, bays and estuaries all around the Island. The fishing season description by province, including the fishing method and closed time for the silverside fishery, are presented in Table 5. For this fishery, the average landing between 1990 and 2000 is of 234.3 t with an average value of $115,700 (Table 2).

Landings for the smelt (*Osmerus mordax*) fishery in the Maritime Provinces have been recorded since the early 1900's. The catch is mainly utilized in fresh or frozen form. The fishing season description by provinces, including the fishing method and closed time for the smelt fishery, are presented in Table 6. The average landing for the smelt fishery between 1990 and 2000 is 996.3 t, with an average value of $1,110,000 (Table 2).

Appendices 1 to 10 provide a graphic representation of the fishing gears.

## MATERIAL AND METHODS

The approach used in this study focuses on local personal knowledge and is based mainly on consultations with fishery officers. Therefore, it is not a purely scientific tool, but rather a planning tool for management and conservation needs that provides a subjective picture of the by-catch incidence within the Southern Gulf of St. Lawrence.

A survey sent out to fishery officers was composed of two sections (Appendix 11). The first section provided a background and purpose of the study. The second section of the survey provided instructions and presented the questionnaire. The questions pertained to information on by-catches in the gaspereau, eel, silverside and smelt fisheries. The questionnaire then considered the amount and the specific location of these by-catches. Finally, the survey provided the freedom to add any general comments that fishery officers had received from fishermen in the area or any comments that they felt were important.

The questionnaire was sent out in January 2001 to the detachment supervisor in every office of DFO's Gulf Region. The Region is composed of 21 local offices co-ordinated by three area offices: Tracadie-Sheila, Charlottetown and Antigonish (refer to Figures 1 to 3 for graphic representation of these areas). Through the survey process, subjective information was obtained from every detachment in the Gulf Region as it applies to by-catches of sport fish found in commercially set box nets and pots.

A month was given to fishery officers of every detachment to gather the information, complete and return the survey. In addition to their local personal knowledge gained from enforcement patrols, fishery officers who participated in the survey reviewed their note books, local report forms and consulted with key local fishermen and stakeholders implicated in the fishery of that area.

Once the survey was filled out and returned, the data were compiled in a spreadsheet that presents the estimated by-catch by detachment for each river system. To get feed back on the interpretation of the comments and recommendations, phone calls were placed to fishery officers from certain local offices. Furthermore, the results of this study were presented to fishery officers in Summerside and Charlottetown, PEI, and a poster was also presented at a workshop on science and local knowledge in Moncton, NB.

## RESULTS

For illustrative purposes, the results of the survey are tabulated in spreadsheet formats (Tables 7 to 10) for each relevant box net fishery and detachment area. The information is presented by species for each province and the level of by-catches is represented by the value 1, 2 or 3 (where the value **1 = minimal or presence of by-catch, 2 = moderate or easily noticeable by-catch within the catch** and **3 = large quantities or where the by-catch is as present as the targeted specie**).

Overall, the results showed that there were a total of seven species intercepted in the gaspereau fishing gear (Figure 4). Perch was the species with the highest average level of by-catch (2.0) and salmon and trout both came up as the by-catch species found in the most river systems (11 river systems).

For the eel fishery, there were a total of eight species intercepted in the fishing gear (Figure 5). For this fishery, flounder was the species with the highest average level of by-catch (2.1) and trout came up as the by-catch species found in the most river systems (17 river systems).

In the silverside fishery, five species were intercepted in the fishing gear (Figure 6). For this fishery, flounder has the highest average level of by-catch (3.0) and is also the species that was found in the most river systems (6 river systems).

Finally, for the smelt fishery, eight species were intercepted in the fishing gear (Figure 7). In this fishery, striped bass has the highest average level of by-catch (2.5) and flounder is the species that was found in the most river systems (19 river systems).

## DISCUSSION

Based on the results of the survey, comments and recommendations of fishery officers, by-catch is an issue that exists within specific areas of the Southern Gulf of St. Lawrence estuarial fisheries. It is to be noted that the degree of by-catch and the species intercepted vary from one watershed to the next; consequently, management measures should be implemented in order to deal with and minimize the interception of sport fish within these river systems.

Working on fishing gear selectivity, managing closed times for fishery, elimination of specific aspects of fisheries and adding specific licence conditions all represent ways to address the by-catch issue. These aspects can be achieved through practices such as: controlling the mesh size of the fishing gears; regulating the leader length and size of the hole entrance in fykes; adjusting the fishing season (adjust the fishery depending on the spawning habits of the fishes in that specific area); and, imposing additional conditions on the licences.

It is important to note that further study will be conducted to ensure that the measures proposed for an area are adequate for that specific river system. Licence conditions, for example, could require that the fishermen open the box net doors after a heavy rainfall to allow for escapement of sport fish that were intercepted after such a rainfall.

It is also important to keep in mind that to manage a fishery, there is a need to gather pertinent information and monitor the fishery and the by-catch so that useful information can be collected on the current health of the resource. Therefore, with designated fishermen for each species, in each area, conducting an index fishery to gather precise data relevant to by-catch, Fisheries Managers would have better information to study the impact of the by-catches and health of the resource thus, enabling managers to understand and better manage the fishery.

Furthermore, there could be a standardized report form filled out by fishery officers during their enforcement patrols. This report form would be filled for each type of fishery and would include information on the by-catch such as the species of fish caught in the net, the number of each species caught and the size of the by-catch (establish size frequency). At sea observers should also be introduced to monitor by-catch in order to increase the validity of the data collected.

Finally, certain practices might have a positive effect in reducing the by-catch, but the landing of saleable fish might be reduced (Bradford, Chaput, Hurlbut, Morin 1997). Therefore, Fisheries Managers must consider the repercussions of it's management techniques and adapt the best approach to resolve the issue while trying to minimize the negative effects on the fishermen.

## RECOMMENDATIONS

These recommendations are taken from the general comments received from each detachment (Appendix 12). Fishing gear selectivity, conditions of license, closed times, and elimination of specific aspects of the fisheries would provide significant reductions in sport fish by-catch.

**Recommendations for Gaspereau; for all areas:**

- Mesh size in the wings should be selected to allow smelts, small trout, juvenile smelts and bass to pass through, while ensuring that large sport fish pass by instead of becoming entangled in the netting. The mesh size should be standardized at 1.5 inches, which is the minimum size identified for the gaspereau fishery in the Maritime Provinces Fisheries Regulation.

**Recommendations for Eel; for all areas:**

- The round hole entrance in the fyke nets should be reduced to a maximum of four inches.
- A maximum leader length of fifty feet with mesh size no greater than 5/16 of an inch.
- Close the spring fishery (because of the high by-catch of sport fish in fyke nets during that period), or consult with the industry during the spring fishery and proceed to a closure when by-catch levels are too high in a specific river system.
- Impose a daily limit on recreational spearing of eels.
- Specific to eels, a practice called flambeauing is carried out at night by spearing. This practice bears close scrutiny due to the ease whereby sport fish, especially salmon, could be easily captured.

**Recommendations for Smelt Box Net; for all areas:**

- The box net season for the open water fishery should not open before November 1 and then closed again when ice in and not reopened until January 1 of each year. It is estimated that up to 75% of trout by-catch would be eliminated by this measure.
- Conditions of license as follows for all areas:
  1. A maximum of 100 ft. of leaders for each box net. This would eliminate fishermen utilizing four leaders, thereby reducing the sport fish by-catch.
  2. During and after heavy rains, mandatory opening of box net doors to allow for escapement of large quantities of juvenile striped bass. These fish are trapped in large quantities during heavy rainfall.

**General recommendations:**

- Consideration should be given to have specific fishermen for each species, in each area, to conduct an index fishery to gather precise data relevant to sport fish by-catch.

- Introduce a standardized report form to be filled out by fishery officers after their enforcement patrols. This report form would include information on the by-catch such as: the species of non targeted fish caught in the nets, the number of catch for each species and the size of the by-catch (only weight in a portion of the by-catch to build a general overview of their size).
- Introduce at sea observer to monitor by-catch.

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**Table 1.** Number of licenses by province for each fishery in 2000.

| Fishery Management Area | Type of Fishery | Number of Commercial Licences |
|---|---|---|
| **East New Brunswick** | Gaspereau | 132 |
| | Eel | 180 |
| | Smelt | 657 |
| **Prince Edward Island** | Gaspereau | 23 |
| | Eel | 713 |
| | Silverside | 95 |
| | Smelt | 338 |
| **Gulf Nova Scotia** | Gaspereau | 101 |
| | Eel | 148 |
| | Smelt | 174 |

Source : Licensing, DFO, Moncton, 2001.

**Table 2.** Landings (t) and value ($000) of gaspereau, eel, silverside and smelt for the Gulf Region from 1990 to 2001.

| | Gaspereau | Eel | Silverside | Smelt |
|---|---|---|---|---|
| | LANDINGS (t) | | | |
| 1990 | 4,763.2 | 293.8 | 81.9 | 928.8 |
| 1991 | 4,733.6 | 294.0 | 117.8 | 1,025.0 |
| 1992 | 4,535.1 | 229.4 | 46.4 | 965.6 |
| 1993 | 4,723.6 | 250.2 | 82.8 | 965.3 |
| 1994 | 3,943.2 | 156.9 | 543.2 | 1,216.2 |
| 1995 | 3,484.9 | 111.0 | 222.7 | 1,086.7 |
| 1996 | 2,402.8 | 96.1 | 151.1 | 898.2 |
| 1997 | 3,024.4 | 97.5 | 237.8 | 877.1 |
| 1998 | 4,284.0 | 105.0 | 231.5 | 1,101.1 |
| 1999 | 4,047.0 | 108.2 | 558.4 | 977.3 |
| 2000 | 2,452.3 | 162.1 | 303.9 | 918.4 |
| 2001* | 2,665.2 | 147.7 | 646.1 | 256.1 |
| Average 1990 2000 | **3,854.0** | **173.1** | **234.3** | **996.3** |
| | VALUE ($000) | | | |
| 1990 | 1,026.5 | 955.3 | 27.1 | 783.3 |
| 1991 | 882.8 | 1,026.0 | 51.8 | 920.9 |
| 1992 | 859.2 | 859.7 | 17.5 | 819.5 |
| 1993 | 907.7 | 961.3 | 29.1 | 1,032.5 |
| 1994 | 581.1 | 672.2 | 207.6 | 1,622.2 |
| 1995 | 562.1 | 544.2 | 72.1 | 1,412.5 |
| 1996 | 472.7 | 542.7 | 43.5 | 989.6 |
| 1997 | 1,003.2 | 529.8 | 102.8 | 1,020.0 |
| 1998 | 1,000.5 | 523.1 | 102.1 | 1,279.1 |
| 1999 | 953.1 | 524.3 | 385.8 | 1,367.1 |
| 2000 | 626.4 | 675.2 | 233.4 | 963.7 |
| 2001* | 683.4 | 619.5 | 428.0 | 338.9 |
| Average 1990 2000 | **806.8** | **710.3** | **115.7** | **1,110.0** |

* Preliminary

Source : Policy and Economics Branch, DFO, Moncton

**Table 3.** Description of the gaspereau fishery: fishing season and fishing methods.

| Item | Waters | Fishing Methods | Yearly Close Time | Weekly Close Time |
|---|---|---|---|---|
| **Nova Scotia** | | | | |
| 1 | Tidal waters of Inverness County and that portion of Victoria County west of Cape North that borders on the Gulf of St. Lawrence | Dip nets, Gill nets, Drift nets, Square nets, Trap nets, Weirs | July 11 to March 14 | From 18:00 h each Friday to 18:00 h on the following Sunday |
| 2 | Inland waters of Inverness County and Victoria County Flowing into the Gulf of St. Lawrence west of Cape North, not referred to in items 3 and 4 | Dip nets, Square nets, Trap nets, Weirs | July 11 to March 14 | From 18:00 h each Friday to 18:00 h on the following Sunday |
| | | Gill nets, Drift nets | Jan. 1 to Dec. 31 | |
| 3 | Southwest Margaree River, from the Highway 19 bridge at Southwest Margaree upstream to Lake Ainslie | Dip nets, Trap nets, weirs | July 11 to March 14 | From 18:00 h each Saturday to 08:00 h on the following Monday |
| | | Gill nets, Drift nets, Square nets | Jan. 1 to Dec. 31 | |
| 4 | Inland waters of the Margaree River, the Northeast Margaree River and the Southwest Margaree River downstream from the Highway 19 bridge at Southwest Margaree | Dip nets, Trap nets, weirs | July 11 to March 14 | From 18:00 h each Friday to 18:00 h on the following Sunday |
| | | Gill nets, Drift nets, Square nets | Jan. 1 to Dec. 31 | |
| 5 | Tidal waters of those portions of the Counties of Antigonish, Colchester, Cumberland and Pictou that border on Northumberland Strait | Dip nets, Gill nets, Drift nets, Square nets, Trap nets, Weirs | July 11 to March 14 | From 14:00 h each Friday to 14:00 h on the following Sunday |
| 6 | Inland waters of Antigonish, Pictou, Colchester and Cumberland Counties | Dip nets, Square nets, Trap nets, Weirs | July 11 to March 14 | From 14:00 h each Friday to 14:00 h on the following Sunday |
| | | Gill nets, Drift nets, Weirs | Jan. 1 to Dec. 31 | |

**Table 3.** Continued...

| Item | Waters | Fishing Methods | Yearly Close Time | Weekly Close Time |
|---|---|---|---|---|
| **New Brunswick** | | | | |
| 7 | Tidal waters of that portion of New Brunswick that borders on the Gulf of St. Lawrence and Northumberland Strait not referred to in item 8 | Dip nets, Gill nets, Drift nets, Square nets, Trap nets, Weirs | July 1 to May 14 | From 12:00 h each Friday to 18:00 h on the following Sunday |
| 8 | Tidal waters of the Miramichi River | Dip nets, Gill nets, Drift nets, Square nets, Trap nets, Weirs | June 16 to May 14 | From 12:00 h each Friday to 18:00 h on the following Sunday |
| 9 | Inland waters of New Brunswick that flow into the Gulf of St. Lawrence and Northumberland Strait | Dip nets, Gill nets, Drift nets, Square nets, Trap nets, Weirs | July 1 to Dec. 31 | From 12:00 h each Friday to 18:00 h on the following Sunday |
| **Prince Edward Island** | | | | |
| 10 | Tidal waters of Prince Edward Island | Dip nets, Gill nets, Trap nets | July 1 to April 30 | From 08:00 h each Saturday to 08:00 h on the following Monday |
| | | Drift nets, Square nets, Weirs | Jan. 1 to Dec. 31 | |
| 11 | Inland waters of Prince Edward Island | Dip nets | July 1 to April 30 | From 08:00 h each Saturday to 08:00 h on the following Monday |
| | | Gill nets, Drift nets, Square nets, Trap nets, Weirs | Jan 1 to Dec. 31 | |

Source : Maritime Provinces Fishery Regulation, 1993

**Table 4.** Description of the eel fishery: fishing season and fishing methods.

| Item | Waters | Fishing Methods | Yearly Close Time |
|---|---|---|---|
| **Nova Scotia** | | | |
| 1 | Inland waters of Nova Scotia | Eel traps | Nov. 1 to Aug. 14 |
| | | Eel pots | Dec. 30 to Dec. 31 |
| | | Spears | Jan. 1 to Dec. 31 |
| 2 | Tidal waters of Nova Scotia | Eel traps, Eel pots, Spears | Dec. 30 to Dec. 31 |
| **New Brunswick** | | | |
| 3 | Inland waters of New Brunswick | Eel traps, Spears | Jan. 1 to Dec. 31 |
| | | Eel pots | Dec. 30 to Dec. 31 |
| 4 | Tidal waters of the Tabusintac River | Eel traps, Eel pots | Dec. 1 to July 31 |
| | | Spears | Sept. 1 to Nov. 15 |
| 5 | Tidal waters of New Brunswick not set out in item 4 | Eel traps, Eel pots | Dec. 30 to Dec. 31 |
| | | Spears | Sept. 1 to Nov. 15 |
| **Prince Edward Island** | | | |
| 6 | Inland waters of Prince Edward Island | Eel traps, Spears | Jan. 1 to Dec. 31 |
| | | Eel pots | Dec. 1 to Aug. 15 |
| 7 | Tidal waters of Prince Edward Island | Eel traps | Dec. 1 to Aug. 15 |
| | | Eel pots | Dec. 30 to Dec. 31 |
| | | Spears | From 17:00 h each day to 07:00 h on the following day from Sept. 1 to Dec. 31 |

Source : Maritime Provinces Fishery Regulation, 1993

**Table 5.** Description of the silverside fishery: fishing season and fishing methods.

| Item | Waters | Fishing Methods | Yearly Close Time |
|---|---|---|---|
| **Nova Scotia** | | | |
| 1 | Inland waters of Nova Scotia | Dip nets, Trap nets | Jan. 1 to Dec. 31 |
| **New Brunswick** | | | |
| 2 | Tidal waters of Nova Scotia | Dip nets, Trap nets | Jan. 1 to Dec. 31 |
| **Prince Edward Island** | | | |
| 3 | Tidal waters of Nova Scotia | Dip nets, Trap nets | Jan. 1 to Sept. 30 |

Source : Maritime Provinces Fishery Regulation, 1993

**Table 6.** Description of the smelt fishery: fishing season and fishing methods.

| Item | Waters | Fishing Methods | Yearly Close Time |
|---|---|---|---|
| **Nova Scotia** | | | |
| 1 | Tidal waters of Nova Scotia | Bag nets, Box nets, Gill nets | Mar. 1 to Oct. 15 |
| | | Dip nets | June 16 to Mar. 31 |
| | | Spears | Dec. 30 to Dec. 31 |
| | | Angling | June 1 to July 31 |
| 2 | Inland waters of Nova Scotia | Bag nets, Box nets, Gill nets, Spears | Jan. 1 to Dec. 31 |
| | | Dip nets | June 16 to Mar. 31 |
| | | Angling | Oct. 1 to Mar. 31 |
| **New Brunswick** | | | |
| 3 | Tidal waters of New Brunswick | Bag nets, Box nets, Gill nets | Mar. 1 to Oct. 15 |
| | | Dip nets | June 16 to Mar. 31 |
| | | Spears | Dec. 30 to Dec. 31 |
| | | Angling | June 1 to July 31 |
| 4 | Inland waters of New Brunswick | Bag nets, Box nets, Gill nets, Spears | Jan. 1 to Dec. 31 |
| | | Dip nets | June 16 to Mar. 31 |
| | | Angling | Oct. 1 to Mar. 31 |
| **Prince Edward Island** | | | |
| 5 | Tidal waters of Prince Edward Island | Bag nets, Box nets, Gill nets | Mar. 1 to Oct. 15 |
| | | Dip nets | June 16 to Mar. 31 |
| | | Spears | Apr. 1 to Nov. 30 |
| | | Angling | Jan. 1 to Dec. 31 |
| 6 | Inland waters of Prince Edward Island | Bag nets, Box nets, Gill nets, Spears | Jan. 1 to Dec. 31 |
| | | Dip nets | June 16 to Mar. 31 |
| | | Angling | Sept. 16 to Apr. 31 |

Source : Maritime Provinces Fishery Regulation, 1993

**Table 7.** Results of by-catch survey in gaspereau box nets, by detachment and river system.

| Detachment | River System | Salmon | Trout | Bass | Perch | Shad | Gaspereau | Br. Bullhead | Pickeral | Wh. Sucker | Lake Whitefish | Eel | Flounder | Smelt | Hbr. Porpoise |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alberton | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Antigonish | West River | 0 | 2 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Baie Ste-Anne | | | | | | | | | | | | | | | |
| Bathurst/ Kedgwick | | | | | | | | | | | | | | | |
| Caraquet | | | | | | | | | | | | | | | |
| Charlottetown | East River | 1 | 2 | 0 | 2 | 0 | | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Cheticamp | Margaree R. | | 1 | 1 | | 1 | | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Dalhousie | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Miramichi | Miramichi | 3 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Montague | | | | | | | | | | | | | | | |
| Neguac | Miramichi | 3 | 3 | 3 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pictou | Pictou Hbr. | 1 | 1 | 1 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Port Hood | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Renous | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Richibouctou | Bouctouche | 1 | 1 | 1 | 0 | 0 | | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| | Richibucto | 1 | 1 | 1 | 0 | 0 | | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| | Kouchibougouais | 1 | 1 | 1 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shippagan | Pokemouche | 0 | 0 | 1 | 0 | 0 | | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Souris | Naufrage | 1 | 1 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| St-Leonard | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Summerside | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tracadie-Sheila | Big Tracadie | 1 | 3 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wallace | River Phillip | 1 | 1 | | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Wallace Bay | 0 | 0 | 1 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Pugwash Hbr. | 1 | 0 | 1 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Legend: 1=Minimal; 2=Moderate; 3=Large Quantities**

**Table 8.** Results of by-catch survey in eel traps or pots, by detachment and river system.

| Detachment | River System | Salmon | Trout | Bass | Perch | Shad | Gaspereau | Br. Bullhead | Pickeral | Wh. Sucker | Lake Whitefish | Eel | Flounder | Smelt | Hbr. Porpoise | Seals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alberton | Cascumpec | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 3 | 0 | 0 | 0 |
| Antigonish | Antigonish Hbr | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 2 | 0 | 0 | 1 |
| | Pomquet Hbr. | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 2 | 0 | 0 | 1 |
| Baie Ste-Anne | | | | | | | | | | | | | | | | |
| Bathurst/ Kedgwick | | | | | | | | | | | | | | | | |
| Caraquet | | | | | | | | | | | | | | | | |
| Charlottetown | Queens Co. | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 0 | 0 | 0 |
| Cheticamp | Lale Ainsle | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 |
| Dalhousie | | | | | | | | | | | | | | | | |
| Miramichi | Northwest R. | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| | Main South West | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Montague | Mitchell R. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 3 | 0 | 0 | 0 |
| | Seal R. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 3 | 0 | 0 | 0 |
| | Boughton R. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 3 | 0 | 0 | 0 |
| Neguac | Tabusintac R. | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Pictou | Merigomish Hbr. | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | | 2 | 0 | 0 | 0 |
| Port Hood | Mabou Hbr. | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| | Little Judique Hbr | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Renous | | | | | | | | | | | | | | | | |
| Richibouctou | | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Shippagan | Pokemouche R. | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Souris | Souris R. | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 0 | 0 | 0 |
| | North Lake | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 0 | 0 | 0 |
| | South Lake | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 0 | 0 | 0 |
| St-Leonard | | | | | | | | | | | | | | | | |
| Summerside | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 3 | 0 | 0 | 0 |
| Tracadie-Sheila | Little Tracadie | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| | Big Tracadie | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |

**Legend: 1=Minimal; 2=Moderate; 3=Large Quantities**

**Table 9.** Results of by-catch survey in silverside box nets, by detachment and river system.

| Detachment | River System | Salmon | Trout | Bass | Perch | Shad | Gaspereau | Br. Bullhead | Pickeral | Wh. Sucker | Lake Whitefish | Eel | Flounder | Smelt | Hbr.Porpoise | Seals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alberton | Little Tignish | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Antigonish | | | | | | | | | | | | | | | | |
| Baie Ste-Anne | | | | | | | | | | | | | | | | |
| Bathurst/Kedgwick | | | | | | | | | | | | | | | | |
| Caraquet | | | | | | | | | | | | | | | | |
| Charlottetown | East River | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | West River | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Morell River | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Pinette River | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cheticamp | | | | | | | | | | | | | | | | |
| Dalhousie | | | | | | | | | | | | | | | | |
| Miramichi | | | | | | | | | | | | | | | | |
| Montague | Georgetown | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 |
| | Graham's Pond | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mink River | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Negusc | | | | | | | | | | | | | | | | |
| Pictou | | | | | | | | | | | | | | | | |
| Port Hood | | | | | | | | | | | | | | | | |
| Renous | | | | | | | | | | | | | | | | |
| Richibouctou | | | | | | | | | | | | | | | | |
| Shippegan | | | | | | | | | | | | | | | | |
| Souris | North Lake | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | Little Harbour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | Souris | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | Fortune | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | Annandale | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| | Boughton R. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |

**Legend: 1=Minimal; 2=Moderate; 3=Large Quantities**

**Table 10.** Results of by-catch survey in smelt box nets, by detachment and river system.

| Detachment | River System | Salmon | Trout | Bass | Perch | Shad | Gaspereau | Br. Bullhead | Pickeral | Wh. Sucker | Lake Whitefish | Eel | Flounder | Smelt | Hbr.Porpoise | Seals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alberton | Mill River | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | | 0 | 0 |
| Antigonish | West River | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | | 0 | 1 |
| Baie Ste-Anne | Loggieville | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | | 0 | 0 |
| Bathurst/Kedgwick | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| Caraquet | Baie de Caraquet | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 0 | 0 |
| | Pokesudie | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 0 | 0 |
| | Morais Office | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 0 | 0 |
| Charlottetown | East River | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 0 | 2 |
| | West River | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 0 | 2 |
| Cheticamp | | | | | | | | | | | | | | | | |
| Dalhousie | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| Miramichi | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| Montague | | | | | | | | | | | | | | | | |
| Neguac | Tabusintac | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| | Miramichi Bay | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | |
| | Miramichi R. | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| Pictou | River John | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| Port Hood | | | | | | | | | | | | | | | | |
| Renous | | | | | | | | | | | | | | | | |
| Richibouctou | Bouctouche | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | | 0 | 0 |
| | Richibouctо | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | | 0 | 0 |
| | Kouchibougouacis | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | | 0 | 0 |
| | Kouchibougouac | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | | 0 | 0 |
| Shippagan | Shippagan Bay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 0 | 0 |
| | St-Simon Bay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 0 | 0 |
| | Miscour Bay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 0 | 0 |
| Souris | | | | | | | | | | | | | | | | |

Table continued on next page.

**Legend: 1=Minimal; 2=Moderate; 3=Large Quantities**

**Table 10.** Continued.

| Detachment | River System | Salmon | Trout | Bass | Perch | Shad | Gaspereau | Br. Bullhead | Pickeral | Wh. Sucker | Lake Whitefish | Eel | Flounder | Smelt | Hbr.Porpoise | Seals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| St-Leonard | | | | | | | | | | | | | | | | |
| Summerside | Summerside Hbr. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 0 | 0 |
| Tracadie-Shella | Big/Little Tracadie | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | | 0 | 0 |
| Wallace | Port Houe(River P) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | | 0 | 0 |
| | Aboiteau-Wallace Bay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | 0 | 0 |
| | Pugwash Hbr. | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |

**Legend: 1=Minimal; 2=Moderate; 3=Large Quantities**

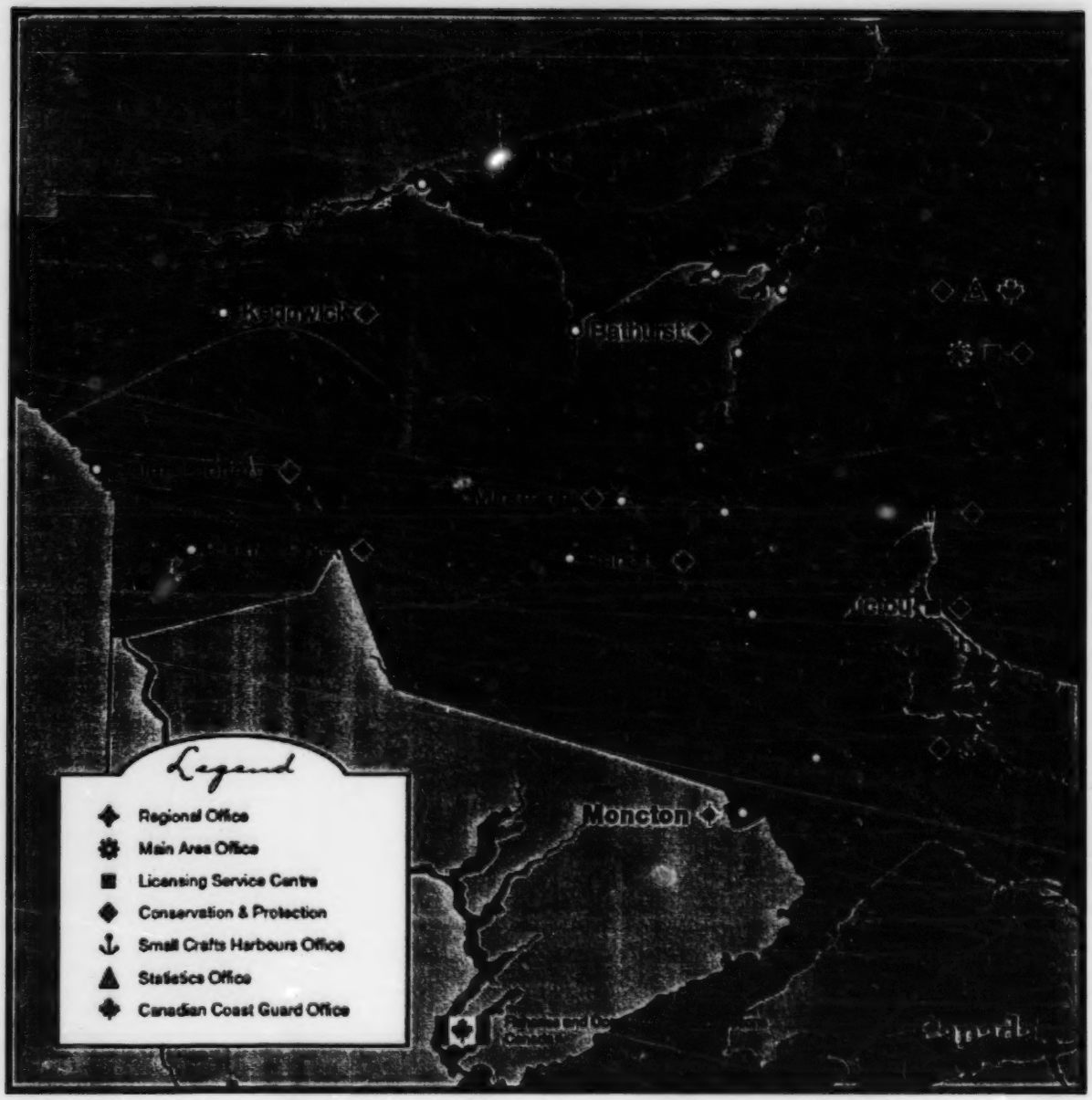



**Figure 1.** The Eastern New Brunswick Area covers the New Brunswick coastline bordering the Gulf of St. Lawrence. DFO's regional Gulf office is situated in Moncton and for the Eastern New Brunswick, DFO's main office is situated in Tracadie-Sheila. This area includes 13 local offices.

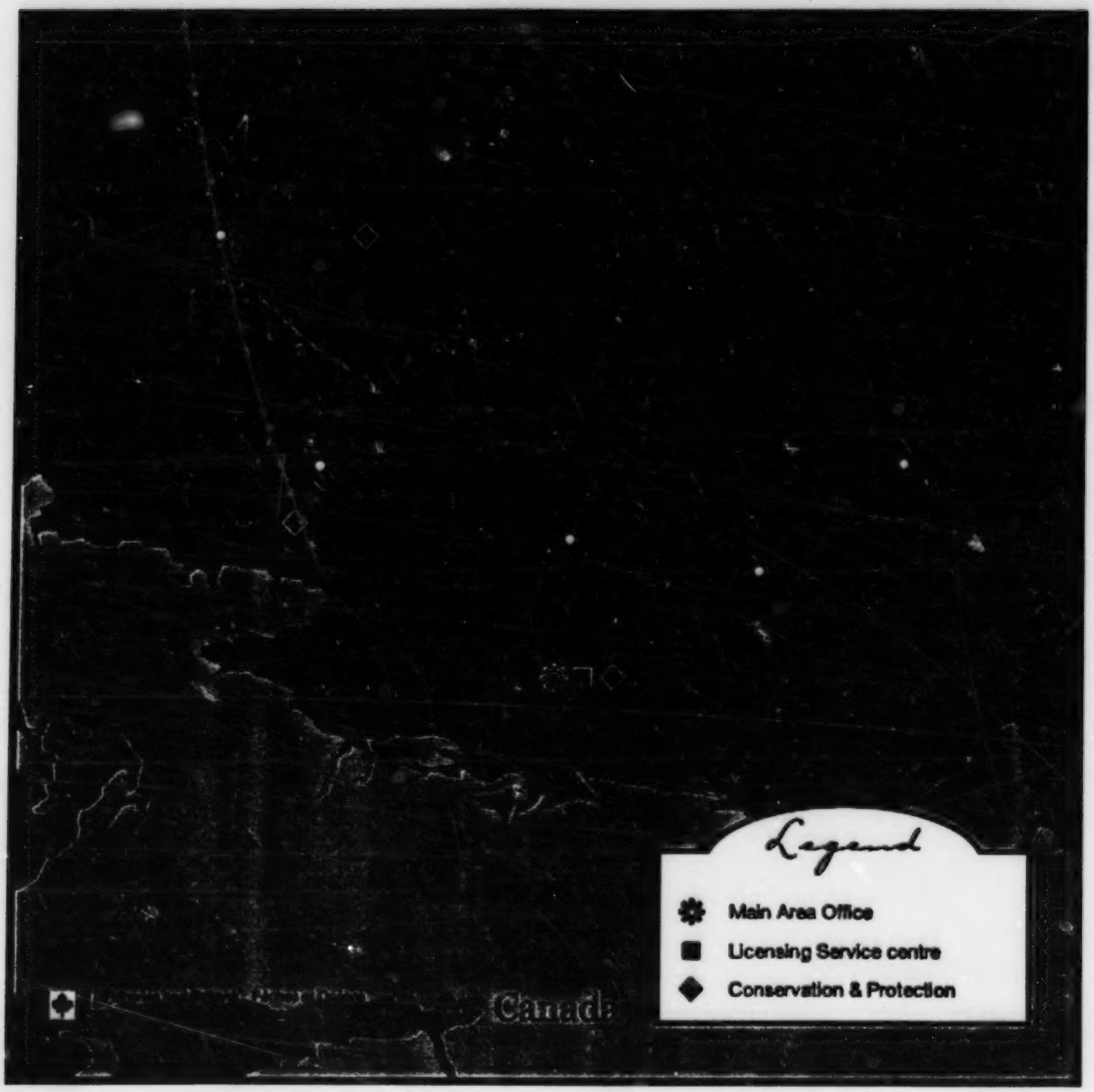



**Figure 2.** The Prince Edward Island Area boundaries coincide with those of the province. For Prince Edward Island, DFO's main Area office is situated in Charlottetown. This area includes 4 local offices.

**Figure 3.** The Gulf Nova Scotia Area includes all Nova Scotia waters within the Gulf of St. Lawrence and the part of Nova Scotia drained by rivers emptying into the Gulf. In Gulf Nova Scotia, DFO's main Area office is situated in Antigonish. This area also includes 4 local offices.

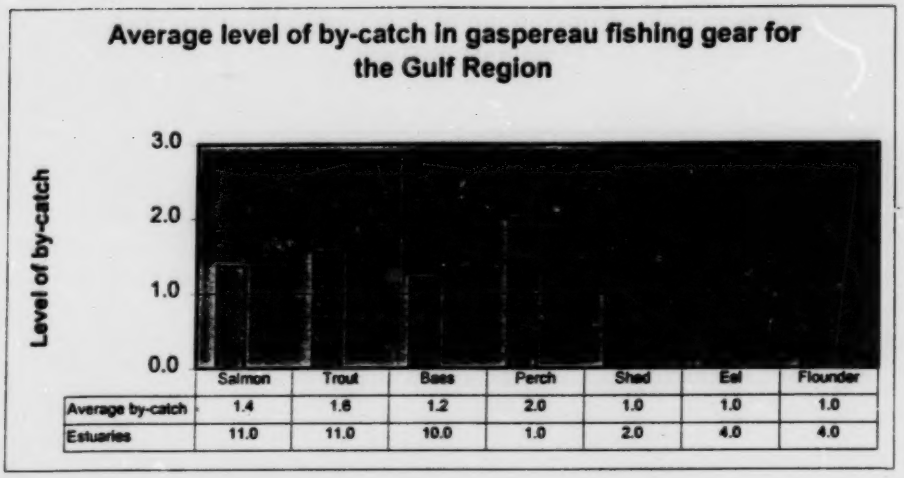
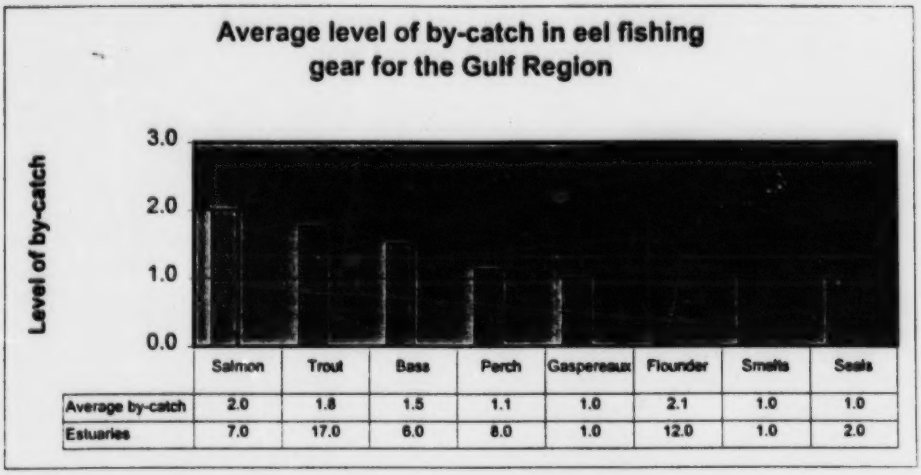



**Figure 4.** Average level of by-catch in gaspereau fishing gear for the Gulf Region.
(Legend – **1 = minimal, 2 = moderate** and **3 = large quantities** of by-catch.)




| | Salmon | Trout | Bass | Perch | Gaspereaux | Flounder | Smelts | Seals |
|---|---|---|---|---|---|---|---|---|
| Average by-catch | 2.0 | 1.8 | 1.5 | 1.1 | 1.0 | 2.1 | 1.0 | 1.0 |
| Estuaries | 7.0 | 17.0 | 6.0 | 8.0 | 1.0 | 12.0 | 1.0 | 2.0 |

**Figure 5.** Average level of by-catch in eel fishing gear for the Gulf Region. (Legend – **1 = minimal, 2 = moderate** and **3 = large quantities** of by-catch.)

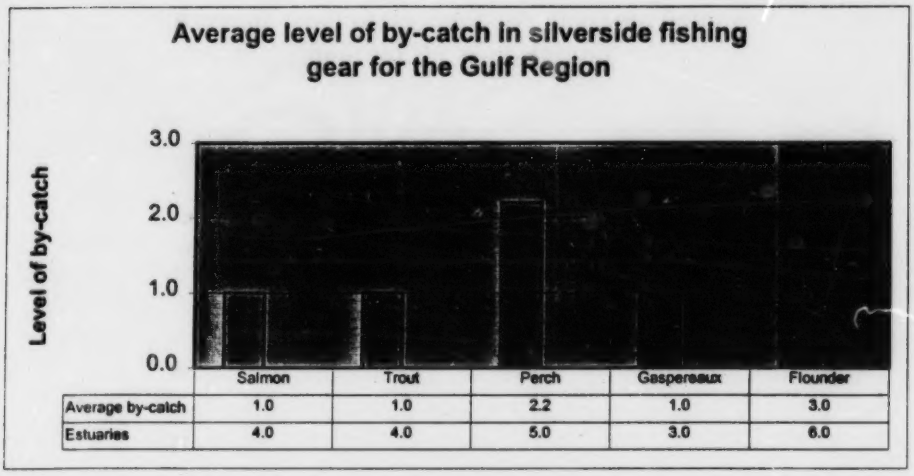



**Figure 6.** Average level of by-catch in silverside fishing gear for the Gulf Region. (Legend – **1 = minimal, 2 = moderate** and **3 = large quantities** of by-catch.)

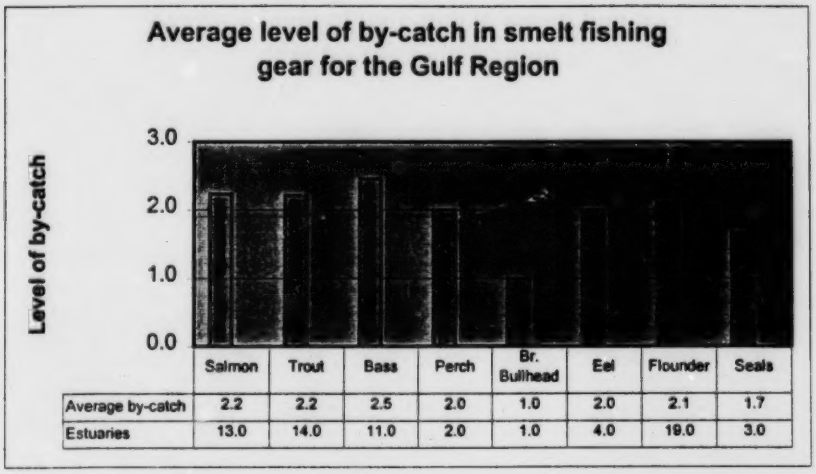
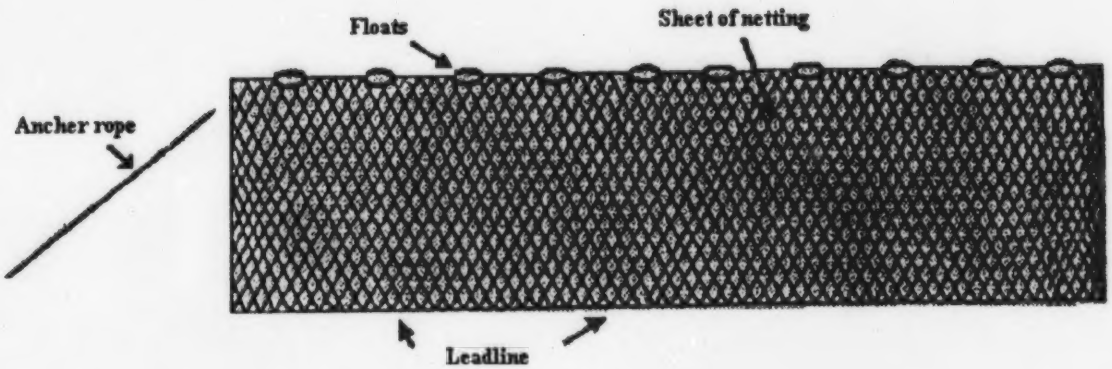


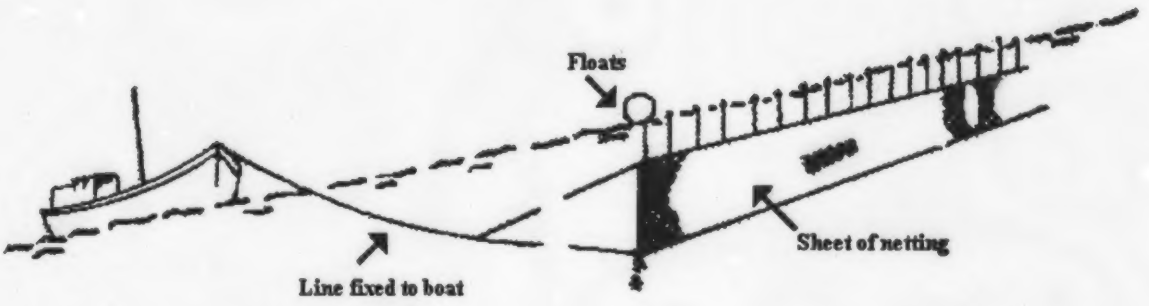

**Figure 7.** Average level of by-catch in smelt fishing gear for the Gulf Region. (Legend – **1 = minimal, 2 = moderate** and **3 = large quantities** of by-catch.)

Appendix 1. Fishing gear, Dip nets

Appendix 2. Fishing gear, Gill nets

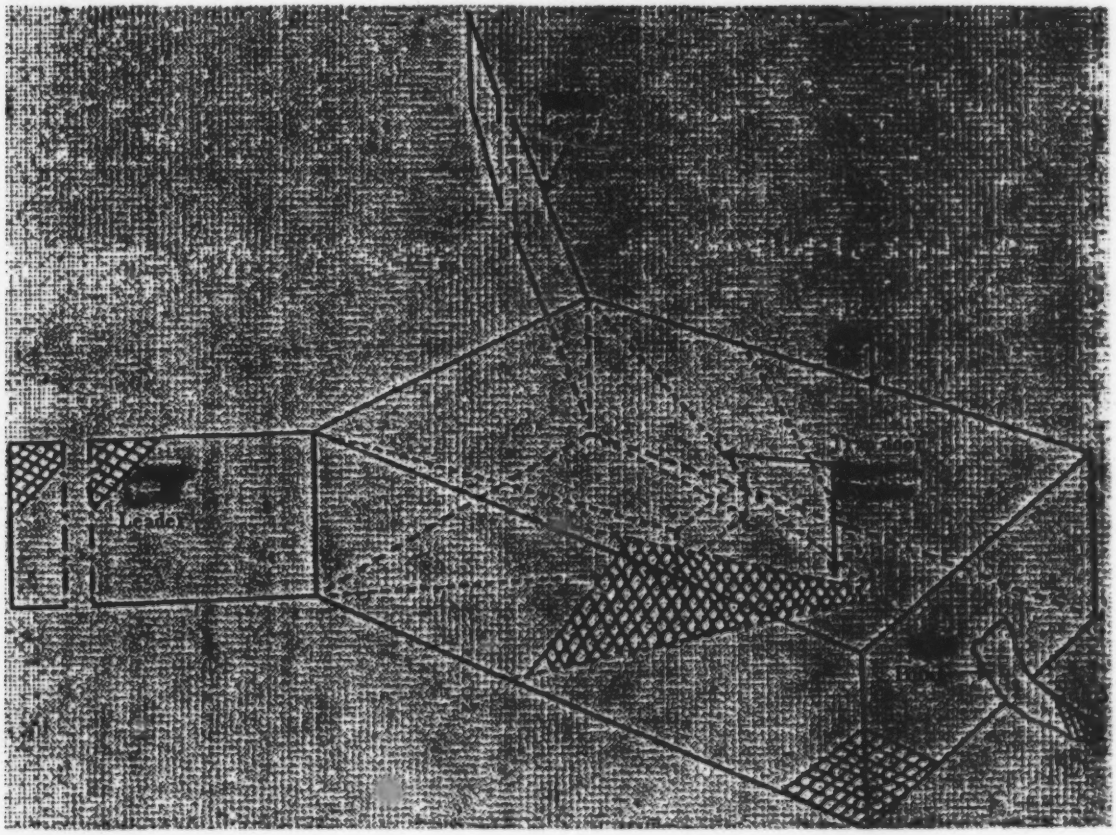


Appendix 3. Fishing gear, Drift nets

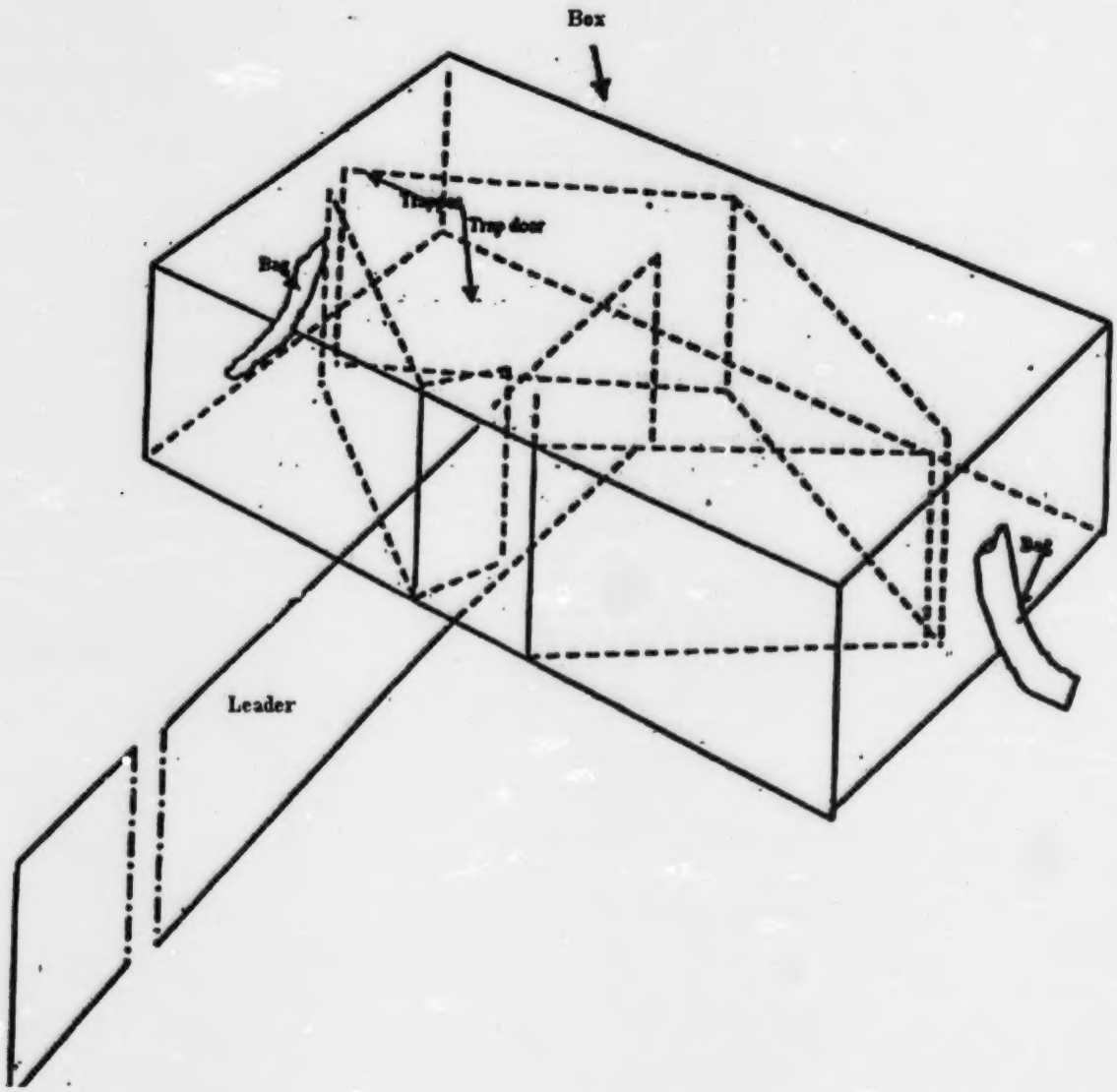



Drawing modified from:
Basso, L.M. 1989. Catalogue des engins de pêche du Québec. Québec, Ministère de l'Agriculture, des Pêcheries et de l'Alimentation, p. 80.

Appendix 4. Fishing gear, Square nets

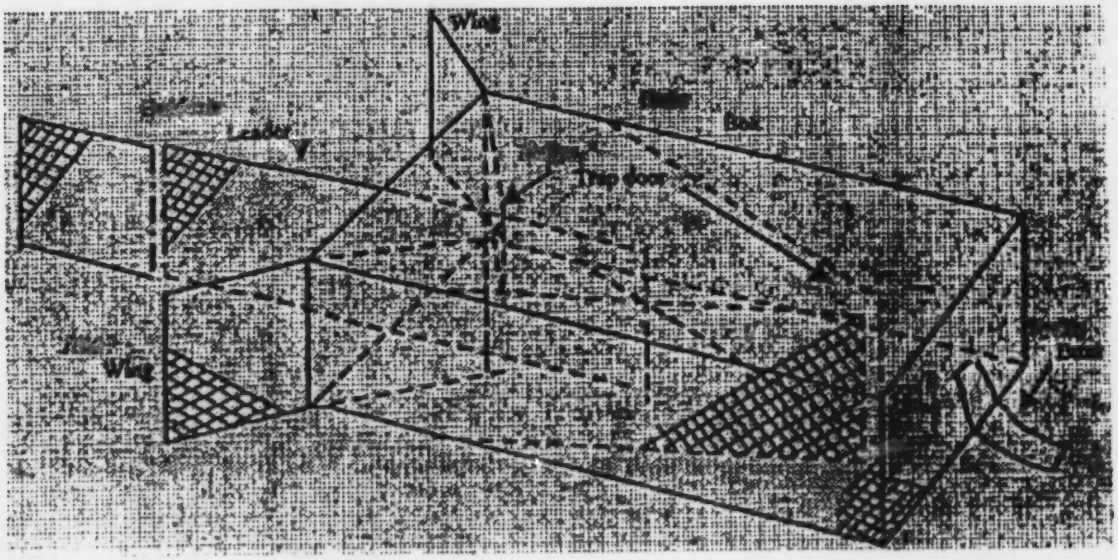


Appendix 5. Fishing gear, Trap nets

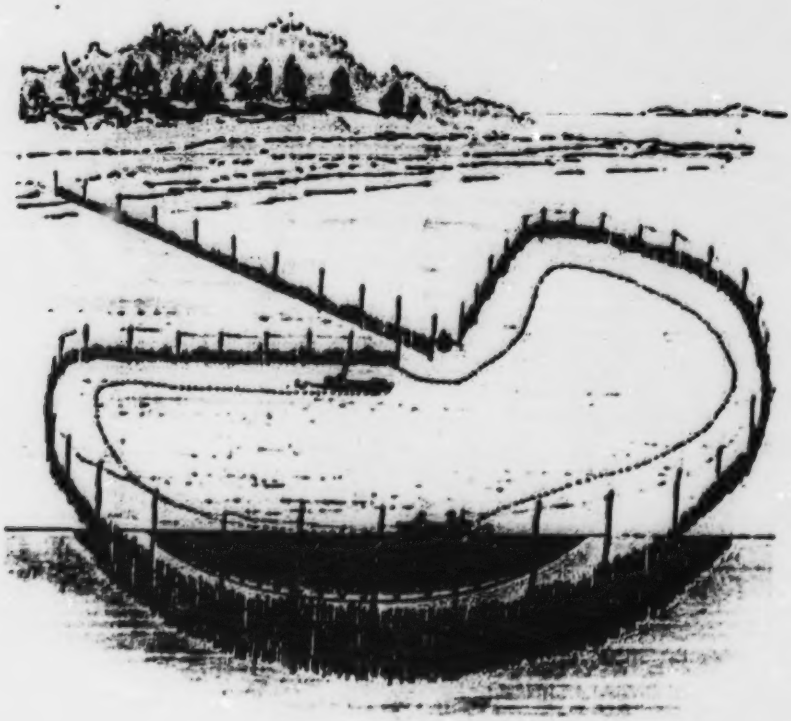


Appendix 6. Fishing gear, Box nets

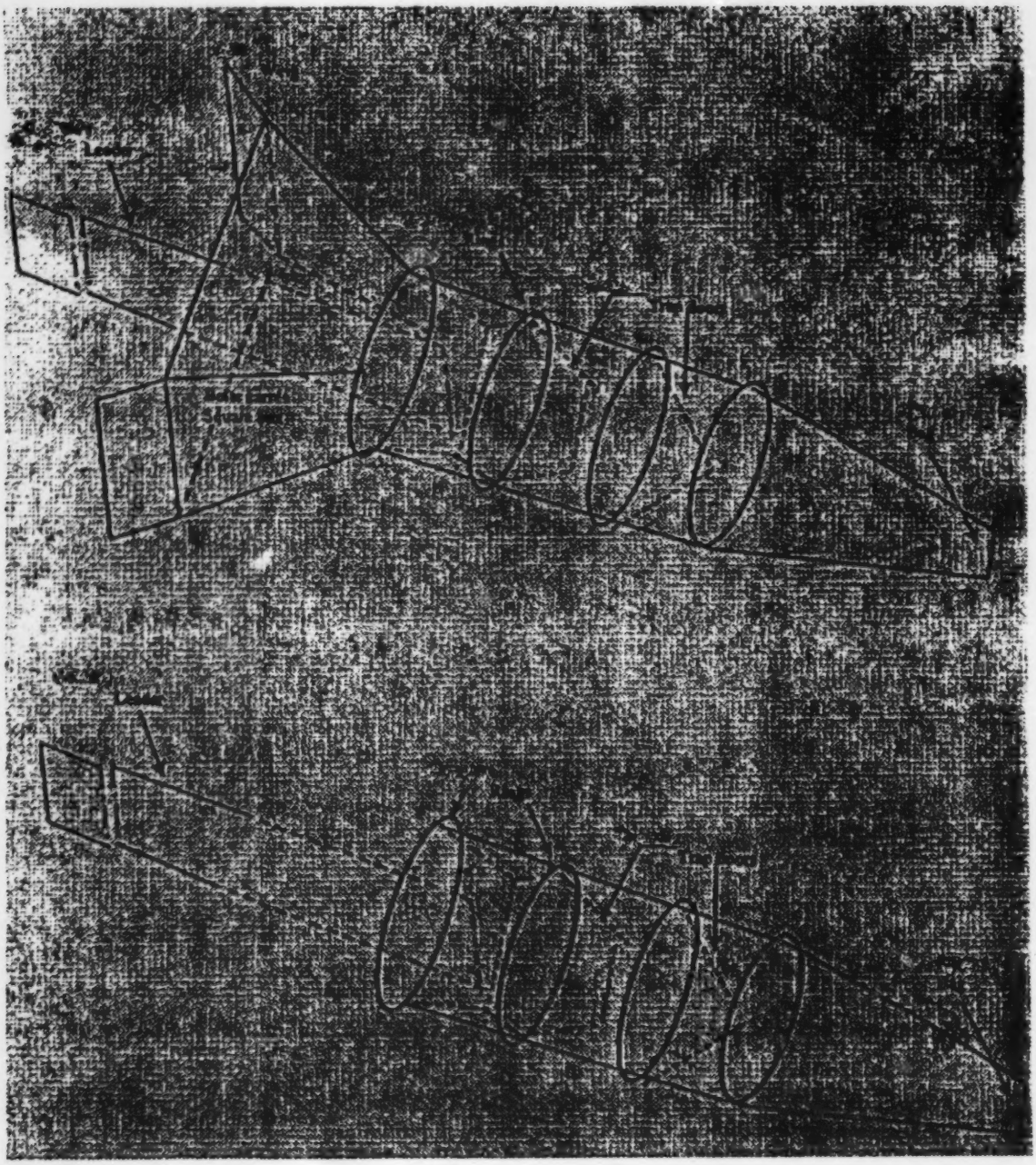
Single box net



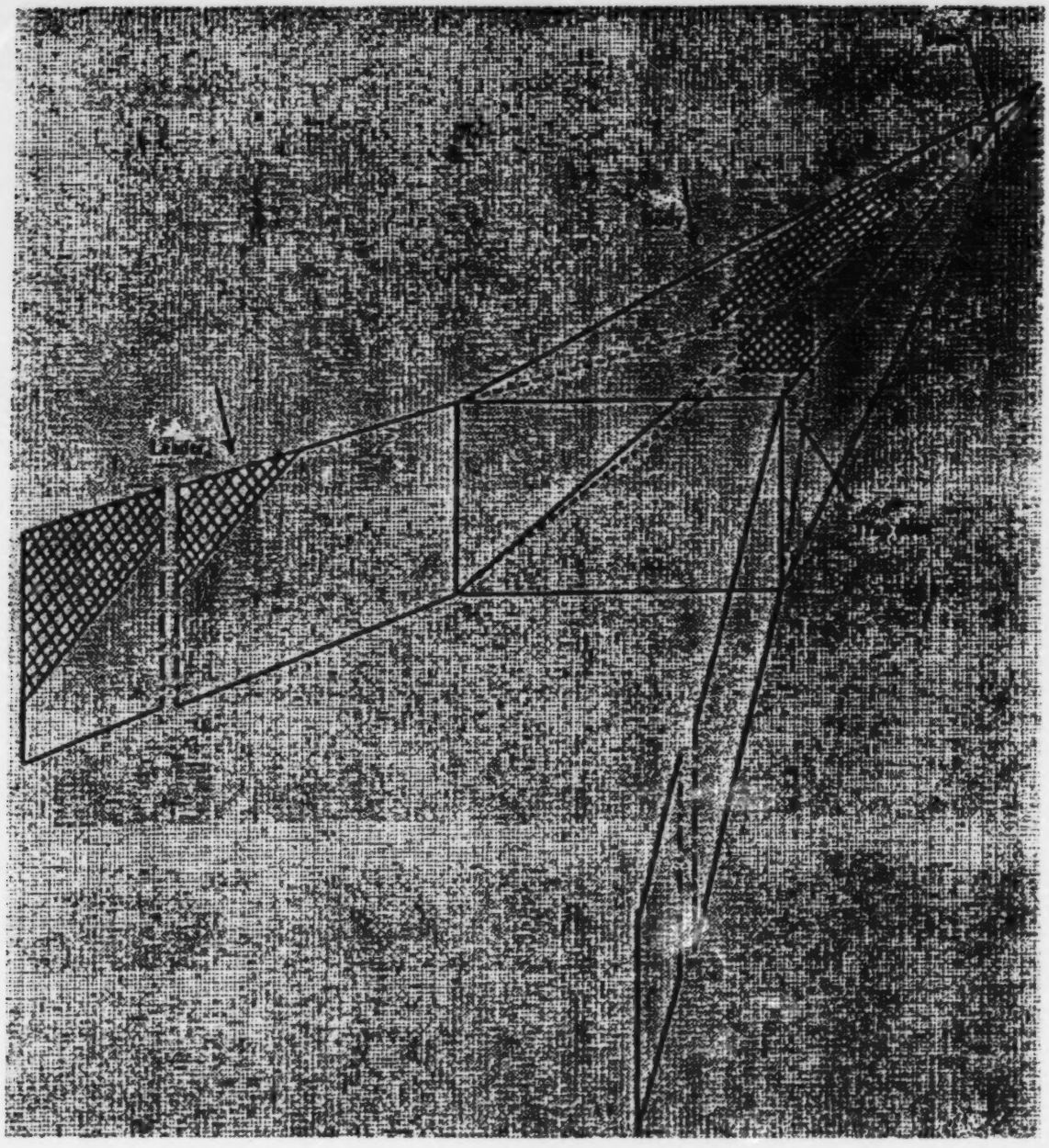
Appendix 7. Fishing gear, Weirs



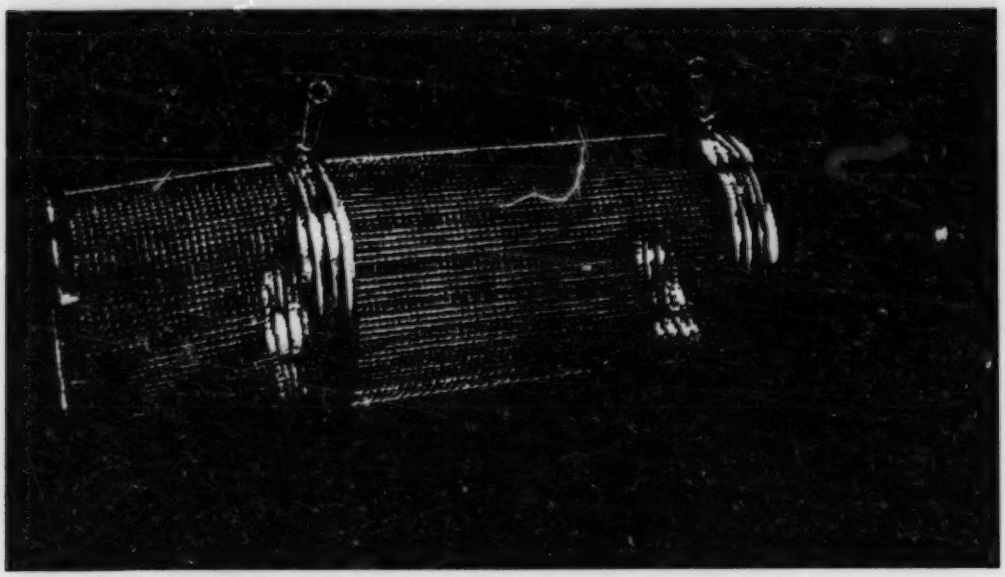
Appendix 8. Fishing gear, Fyke nets



Appendix 9. Fishing gear, Bag nets



Appendix 10. Fishing gear, Eel pots



Appendix 11. Box net by-catch survey.

## BOX NET BY-CATCH SURVEY

**BACKGROUND:**
***A prerequisite towards advancing specific recommendations to resource management and/or respective authorities is the necessity to gather pertinent information.***
***The intent of this survey is to obtain information from your detachment area as it applies to any by-catches of sports fish found in commercially set box nets. The overall long-term objective is to*** "minimize the interception of sports fish" ***in commercial box nets set for smelts, gaspereaux, silversides, and in traps or pots set for eels.***

***Species of sports fish would include*** *Salmon* ***(atlantic, landlocked)*** *Trout* ***(lake, brook or speckled, brown, rainbow, and sea trout.)*** *Bass* ***(smallmouth, largemouth, striped)*** *Perch* ***(white, yellow)*** *Shad, Gaspereau, Brown Bullhead, Chain Pickerel, White Sucker, Lake Whitefish, Eel.*

***Comments about species such as*** *Flounder, Smelts, Eels* ***would be appreciated. Of special interest would be any incidental catch of*** *Harbour Porpoise* ***caught in any type of fishing gear.***

*BOX NET BY-CATCH SURVEY*

*Detachment Area:* *Date:*

***Based on your local area knowledge and/or enforcement activities, please provide any sports fish by catch in any of the following commercially set box net gear types: Please provide comments about any other species such as flounder, smelts, mackeral and harbour porpoise. In addition please indicate in the comments section if this is*** *not* ***a regulated fishery in your detachment area. Please place an "X" next to Yes: or No: and if "yes" fill in the balance. Comments are especially welcome. Thanks.***

*By-catch in Gaspereaux box nets:*

***Yes:*** ***No:***
***If yes, species:*** ***Amount:***
***Specific location(s):***
***Comments:***

*By-catch in Smelt box nets:*

***Yes:*** ***No:***
***If yes, species:*** ***Amount:***
***Specific location(s):***
***Comments:***

*By-catch in Silverside box nets:*

***Yes:*** ***No:***
***If yes, species:*** ***Amount:***
***Specific location(s):***
***Comments:***

*By-catch in Eel traps or pots:*

***Yes:*** ***No:***
***If yes, species:*** ***Amount:***
***Specific location:***
***Comment***

Please provide any additional comments:

# GENERAL COMMENTS BY DETACHMENT; COMMERCIAL BOX NET BY-CATCH SURVEY

March, 2001

## Alberton, P.E.I.

**Comments smelt:**

Smelt box nets: Numerous reports received indicating by-catch of trout being "claimed" by native individuals.

## Antigonish, N.S.

**Comments gaspereaux:**

Gaspereaux dip stands on rivers intercept trout. With the decrease in the value of gaspereaux, this effort has declined. Gaspereaux trap nets (coastal) have not been used for the past 5 years (no demand for pickled gaspereaux) they used to catch salmon.

**Comments eel:**

Eel fyke nets (hoops) used in harbors can have a large by-catch of other species. Pots are not as bad.

## Baie Ste-Anne, N.B.

**General comments:**

I am pleased to provide you the by-catch information of commercial fisheries in my area. This encompasses the Miramichi Bay from Baie Ste-Anne to Chatham Bridge. I have a violation report that might interest you. I had thought that the problem have been resolved 4 or 5 years ago but I realize that a very large amount of juvenile stripped bass are still being killed every day during that fishery.

## Bathurst, N.B.

**Comments smelt:**

There is some salmon and trout caught in the smelt box net. The amount would be a guest. But I believe that the fishermen have to fill logbooks. Therefore this information could be had from statistics. The amount of salmon depends on how big is the January thaw. We have a salmon conviction in February 1996 in this area.

## Caraquet, N.B.

**Comments gaspereaux:**

Gaspereaux: No fishermen for Gaspereaux in Caraquet region.

**Comments silverside:**

Silverside: None in Caraquet.

**Comments eel:**

Eel: None in Caraquet.

**Comments smelt:**

Smelt: flounder, skate, Atlantic tomcod, cusk, "rock cod". Atlantic tomcod is fish in big amounts during certain times of the year. The other species are present in the box nets for all the fishing season, but in smaller numbers. I have not seen any trout, salmon or any other sports fish, in the box nets.

## Charlottetown, P.E.I.

**General comments:**

It's hard to put an amount on how many of each species are caught. It usually depends on the time of year and if the run for that particular species is on or not. Seals are also frequently caught especially in the smelt box net fishery.

## Cheticamp, N.S.

**Comments gaspereaux:**

We do not have a gaspereaux box net fishery in our area, however, we do have a gaspereaux weir fishery on the Margaree river. In past years we have observed small by-catches of lamprey eels, shad and stripe bass. I would also suspect that there are some instances of trout being caught in this fishery also.

**Comments eel:**

Our coverage has two types of eel trap fisheries: 1) Inland trap nets 2) Coastal fyke nets. Our inland eel trap fishery used to have a juvenile gaspereaux bycatch problem as it's timing coincided with the migration of juvenile gaspereaux that were exiting Lake Ainsle. Approximately 5 years ago the season opening date was changed from August 15 to Sept.1. This latter starting date seems to have eliminated our bycatch problem.

In our fyke net fishery, I would suspect the bycatch of small amounts of smelts and perch.

## Dalhousie, N.B.

**General comments:**

To our knowledge there have been no incidental catch of any sport fish in smelt box nets or bag nets in the year 2000.

## Miramichi Sub-district 71, N.B.

**General comments:**

These figures vary from year to year. This doesn't include any trap net catches from the Red Bank and Eel Ground First Nation.

## Montague, P.E.I.

**Comments gaspereaux:**

No gaspereaux box nets in this area.

**Comments eel:**

Eel pots have a bycatch of flounder, hake and lots of green crab and a significant amount of juvenile hake.

**Comments smelt:**

In the smelt box nets there was a by catch of trout and salmon and there was evidence of harbor seals present.

## Neguac, N.B.

**Comments gaspereaux:**

On the gaspereaux fisheries there is not much that we can do. This fishery is well look after by local F/O's.

**Comments eel:**

Eel net: I believe that eel nets or pots are the most destructive nets of all. It is able to catch trout, strip bass, salmons, and shad, lobsters and flounders with very little regulation set by our department. Fishers are allowed to fish a very long season, which many believe to be to long. This should be look at very seriously.

I believe that modifying those type of fishing nets could be make, to not allow other kind of fish to enter those nets, by simply reducing the hole size in the net trap.

Also there is a winter recreation eel fisheries being fish by spearing eel through a cut hole through the ice. Eel mud themselves up the Tabusintac River and they are very vulnerable. This practice should stop right away. The spearing of eel in the summer is only a cover up to spear trout in the lower bays. Stopping this kind of fishing will only help the recreation fish.

**Comments smelt:**

On the smelt fishery, I believed the D.F.O. could review the season on the Tabusintac River in the fall season. I believed the season start too early. The salmon and trout are going up at that time of the year and there are many small juvenile stripe bass in the River system. The season should be set at least two weeks back. Also after a rain in the fall there is nothing to see thousand of small stripe bass in a single smelt net. Fishers try there best not to harm the small bass but went they lift the box or bag net 50% of the bass are already dead due to the current pushing the small juvenile fish again the back of the net.

Also as soon that the ice freezes on the Tabusintac River, the trout and strip bass start coming down the rivers to go spent the winter in the deeper pool. Fishers also set their smelt nets on the early ice and catch trout that are going to these pools. I believe that the smelt season should only start on the first of January. This will give the trout time to reach their pools. I believe the D.F.O should make different seasons for the smelt fisheries, one for open water smelt fishing and one for on the ice smelt fishery.

I believe this is the only way that we can protect the recreation fish's and also allow our clienteles a fair opportunity to make a decent living. I don't believe that if we ask the fishers to modify their fishing gears, that this will help us at all.

## Pictou, N.S.

**Comments gaspereaux:**

Gaspereaux: Over the past years there has been two trap nets set in Pictou Hbr. Talking to the owners on different occasions. I, we have learned that there has been occasions where trout, stripped bass, salmon (slink) , flatfish, tomcod, rock crab caught in these traps. We also know that the gaspereaux/mackerel trap off Melmerby Beach owned by Seymour Colquhon has caught salmon during the month of June on several occasions. Unfortunately I can give accurate numbers on this by catch.

**Comments eel:**

Eel: Flat fish, water birds, trout, rock crab, grilse salmon, perch stripe bass, amount unknown; Specific location, Merigomish Hbr. Although there are not many eel traps/fyke nets being used in Merigomish Hbr. In the past three years due to declined eel stocks. I have personal knowledge of all off the above species being caught at one time or another in these types of nets, due to patrols and inspections of this gear.

**Comments smelt:**

Smelt: Again I cannot give actual numbers because they are not available, but we do know that in the past years on occasions, there has been trout and tomcod caught in this nets. This information has been obtained from conversations with the owners of the box net sites.

## Port Hood, N.S.

**Comments gaspereau:**

Gaspereaux: no fishermen for Gaspereaux in Port Hood region.

**Comments eel:**

Eel: the Port Hood area only has eel fyke nets and pots, with very minimal by-catch of trout and smelt. For the past couple of years there has been no eel activity in the area.

**Comments silverside:**

Silverside: none in Port Hood.

**Comments smelt:**

Smelt: none in Port Hood.

## Richibouctou, N.B.

**Comments gaspereaux:**

Gaspereaux: Early part of the spring season before the gaspereaux run is the worst time for by-catches.

**Comments eel:**

Eel: Salmon, trout, juvenile stripped bass and juvenile gaspereaux and juvenile flounders.

When these by-catches are released as required it's not a problem but delay in releasing, gear left unattended for long times and the keeping of these sport fishes and others are the main reason why inland boundaries and seasons should be looked at.

**(Richibouctou, N.B. – Continued)**
**Comments smelt:**
Smelt: Salmon are mostly caught in open water in early fall especially when waters are low. Bass and trout are caught mostly in winter in the upper reaches of the Richibouctou River and tributaries.

## Souris, P.E.I.

**Comments gaspereaux:**
Gaspereaux: Naufrage Hbr. This area was first utilized this spring during late May and through June so it is difficult to establish by-catch species & quantities. However from the information I gather from the fishermen I believe them to be quite small. There were 3 box nets set in this area and only one remained until the end of the migration period. The others had moved to other locations where the fish were more abundant. This is the first time that I am aware of gaspereaux box nets being set in this area.
**Comments eel:**
Eel: Trout, Yellow Perch, Small winter flounder, amount: minimal
Specific location: All local areas where these species are present
Comments: Due to the mesh size in the leaders and the trap itself, undoubtedly these species will be caught. I believe the retention of these by-catch species, by fishers, in this area to be quite low.
**Comments silverside:**
Silverside: North Lake (possibly other sites as well) We have activity in the fall at North Lake (1 site), Little Harbour (2 sites), Souris (6 sites), Fortune (1 site), Annandale & Boughton River (1 site each). All are not active at the same time. Traditionally there are 4 local fishers that pursue this fishery for a combined total of 10 traps issued. On occasion a fisherman from another part of the Island will set gear in this area. This is the first year I've heard of any substantial by-catch of winter flounder in this gear type.
**General comments:**
Just one comment I might add. The information that I am offering here is based on my local knowledge and from information gathered from fishers who pursue these fisheries. Therefore perhaps what I have offered here is general at best. I might suggest that in the future the Rec. Fisheries Branch approach the Resource Management Branch to identify some Index Fishers in these particular fisheries for 2001. Every area has Advisory Boards set up to discuss management issues with Resource Management. I know of local fishers that take a keen interest in the conservation of their fisheries and I'm sure would be willing to compile data for this purpose. Actually I don't think it would be too difficult to find a fisher in each area willing to volunteer to accept this role. I'm sure you would have more precise data. Just keep the data collection information simple so it is easy to complete and compile.

## Summerside, P.E.I.

**Comments eel:**

Ell nets in the Alberton patrol area (Cascumpec Bay and tributaries) getting high number of flounder, the odd lobster depending on the depth of the net, and the occasional Striped Bass. Also reported that they are getting several trout. Black ducks have been observed in ell nets as well.

**Comments smelt:**

Fishers informing us that in the fall they are getting a lot of trout and Salmon in the smelt box nets. They say they don't get many trout in the winter.

## Tracadie-Sheila, N.B.

**Comments gaspereaux:**

Gaspereaux: Numerous trout are also caught in the wings of the gaspereaux trap net. The mesh size is between 2 and 2.5 inches in size and at the beginning of the fishery it is not unusual to see 10 to 12 trout dead in the wings. Some fishermen say that they have to put that size of mesh because if it is smaller it gets dirty real quick and the current then removes the wing. It is funny that they usually place the biggest mesh size close to the shore. That is where they catch all the trout. There should be a condition of license or a regulation decreasing the mesh size of the wings.

**Comments smelt:**

Smelt: In the smelt box net in the fall the season should not start before the 1st of November or maybe the 15th. More monitoring should be directed towards this in order to have a better understanding. Until we go through the process of installing counting fences in the river we will never have a true count of what is in the rivers.

## Wallace, N.S.

**Comments smelt:**

Smelt: striped bass /salmon. Amount: many/6 to 8
Specific location(s): Pugwash Harbour
Comments: fisher has stated that he was catching so many small bass he had to pull his net out. The species is unconfirmed here.
Specific location(s): Port Howe (River Philip)
Comments: smelt catches quite low, Brown Bullhead (frostfish?) & a few flounders are sometimes caught.
Specific location(s): Aboiteau – Wallace Bay
Comments: a few small flounders caught in smelt box net

**(Wallace, N.S. – Continued)**
**General comments:**
Millbrook First Nation – Salmon Food Fishery Trap Net
This trap is located on the River Philip in approximately the same location as a gaspereaux set is located. The gaspereaux trap is fished in May & June by a licensed (MPFR) fisher and the location is then used in late September, October & November for the Millbrook NATF. The past couple of years have seen a number of salmon caught, 17 MSW & 6 Grilse caught in 2000, a few more in 1999, but the trap has been going in a little late for the early estuary run. In 1999 large numbers of small Striped Bass were caught & released. This capture & identification was observed by Shane McQuaid of DFO Halifax & could provide more information.